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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/731,156

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Seisho Yasukawa

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EXAMINER

NGUYEN, TOAN D

ART UNIT

PAPER NUMBER

2616

NOTIFICATION DATE

DELIVERY MODE

09/08/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/731,156	<b>Applicant(s)</b> YASUKAWA ET AL.	
	<b>Examiner</b> TOAN D. NGUYEN	<b>Art Unit</b> 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/25/08 has been entered.

### ***Response to Arguments***

2. Applicant's arguments filed 06/25/08 have been fully considered but they are not persuasive.

The applicant argues with respect to claim 1 on page 10, third paragraph that Sheu fails to teach or suggest a method for obtaining multicast paths which includes obtaining minimum delays paths from the source node to each of the destination nodes, selecting candidate nodes of a rendezvous point node only from nodes on one of the obtained minimum delay paths and calculating minimum delay paths from the candidate node to each of the destination nodes to select a rendezvous point node, as recited in independent claim 1. The examiner disagrees. Sheu clearly discloses on page 613, lines 15-16, the following passage: "In selecting such a central node, we will resort to adopt the minimum delay path algorithm (selecting, as candidate nodes of a rendezvous point code only from nodes on one of the obtained minimum delay paths means)." Sheu discloses on page 613, lines 26-34 the following passage: "In our DDVCA, we intend to

Art Unit: 2616

obtain a multicast tree with a small multicast delay variation by using the minimum delay as the end-to-end delay between two nodes (nodes on one of the obtained minimum delay paths means). Our method is based on the following two observations 1) the minimum delay path between two nodes can be quickly located by Dijkstra's algorithm. (2) Using the minimum delay path between two nodes as their transmission path easily satisfies the multicast end-to-end delay constraint." Furthermore, Sheu discloses the limitation features "calculating minimum delay paths from the candidate node to each of the destination nodes to select a rendezvous point node" on page 614, second column, lines 2-5, and figure 3, page 614, line 18 to page 615, line 5.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-2, 5-7 and 10-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Sheu et al., (IEEEICC, page 611-618, "A Fast and Efficient Heuristic Algorithm for the Delay-And Delay Variation Bound Multicast Tree Problem", 2001).

For claim 1, Sheu et al. disclose a fast and efficient heuristic algorithm for the delay-and delay variation bound multicast tree problem, comprising the steps of:

obtaining minimum delay paths from the source node to each of the destination nodes by using topology information and delay information of the network (page 613, section 3.1. The Basic concept of DDVCA, lines 23-32);

selecting candidate nodes of a rendezvous point node only from nodes on one of the obtained minimum delay paths (page 613, lines 15-16, and lines 26-34);

for each of the candidate nodes, calculating minimum delay paths from the candidate node to each of the destination nodes, and obtaining a difference between the maximum value and the minimum value among delays of the calculated minimum delay paths (page 614, second column, lines 2-5, and figure 3, page 614, line 18 to page 615, line 5);

selecting, as the rendezvous point node, the candidate node for which the difference is smallest among differences for all of the candidate nodes (Table 1, page 615, lines 15-17); and

outputting, as the multicast paths, a minimum delay path from the source node to the rendezvous point node and minimum delay paths from the rendezvous point node to each destination node (page 614, lines 20-24, and page 615, lines 18-19).

For claim 2, Sheu et al. disclose wherein the minimum delay path on which the candidate nodes exist is one having maximum delay among minimum delay paths from the source node to each of the destination nodes (page 614, second column, Table 1, line 27 to page 615, line 5).

For claim 5, Sheu et al. disclose a fast and efficient heuristic algorithm for the delay-and delay variation bound multicast tree problem, comprising the steps of:

a part configured to obtain minimum delay paths from the source node to each of the destination nodes using topology information and delay information of the network (page 613, section 3.1. The Basic concept of DDVCA, lines 23-32);

a part configured to select candidate nodes of a rendezvous point node only from nodes on one of the obtained minimum delay paths (page 613, lines 15-16, and lines 26-34);

a part configured to calculate, for each of the candidate nodes, minimum delay paths from the candidate node to each of the destination nodes, and obtain, for each of the candidate nodes, a difference between the maximum value and the minimum value among delays of the calculated minimum delay paths (page 614, second column, lines 2-5, and figure 3, page 614, line 18 to page 615, line 5);

a part configured to select, as the rendezvous point node, the candidate node for which the difference is smallest among the differences for all of the candidate nodes (Table 1, page 615, lines 15-17); and

a part configured to output results comprising, as the multicast paths, a minimum delay path from the source node to the rendezvous point node and minimum delay paths from the rendezvous point node to each of the destination nodes (page 614, lines 20-24, and page 615, lines 18-19).

For claim 6, Sheu et al. disclose wherein the minimum delay path on which the candidate nodes exist is one having maximum delay among minimum delay paths from the source node to each of the destination nodes (page 614, second column, Table 1, line 27 to page 615, line 5).

For claim 7, Sheu et al. disclose further comprising:

a part configured to receive the topology information and the delay information of the network (section 3.2. A format description of DDVCA, page 614, lines 2-9); and

a part configured to store the received information in a recording medium,

wherein the multicast communication path calculation apparatus calculates the multicast paths by reading the received information from the recording medium (section 3.2. A format description of DDVCA, page 614, line 10 to second column, line 5).

For claim 10, Sheu et al. disclose a fast and efficient heuristic algorithm for the delay-and delay variation bound multicast tree problem, comprising the steps of:

program code means for obtaining minimum delay paths from the source node to each of the destination nodes using topology information and delay information of the network (page 613, section 3.1. The Basic concept of DDVCA, lines 23-32);

program code means for selecting candidate nodes of a rendezvous point node only from, nodes on one of the obtained minimum delay paths (page 613, lines 15-16, and lines 26-34);

program code means for calculating, for each of the candidate nodes, minimum delay paths from the candidate node to each of the destination nodes, and obtaining, for each of the candidate nodes, a difference between the maximum value and the minimum value among delays of the calculated minimum delay paths

program code means for selecting, as the rendezvous point node, the candidate node for which the difference is smallest among the differences for each of the candidate nodes (Table 1, page 615, lines 15-17); and

program code means for outputting results comprising, as the multicast paths, a minimum delay path from the source node to the rendezvous point node and minimum delay paths from the rendezvous point node to each of the destination nodes (page 614, lines 20-24, and page 615, lines 18-19).

For claim 11, Sheu et al. disclose wherein the minimum delay path on which the candidate nodes exist is one having maximum delay among minimum delay paths from the source node to each of the destination nodes (page 614, second column, Table 1, line 27 to page 615, line 5).

For claim 12, Sheu et al. disclose a fast and efficient heuristic algorithm for the delay-and delay variation bound multicast tree problem, comprising the steps of:

program code means for obtaining minimum delay paths from the source node to each of the destination nodes using topology information and delay information of the network (page 613, section 3.1. The Basic concept of DDVCA, lines 23-32);

program code means for selecting candidate nodes of a rendezvous point node only from, nodes on one of the obtained minimum delay paths (page 613, lines 15-16, and lines 26-34);

program code means for calculating, for each of the candidate nodes, minimum delay paths from the candidate node to each of the destination nodes, and obtaining, for each of the candidate nodes, a difference between the maximum value and the minimum value among delays of the calculated minimum delay paths



Art Unit: 2616

program code means for selecting, as the rendezvous point node, the candidate node for which the difference is smallest among the differences for each of the candidate nodes (Table 1, page 615, lines 15-17); and

program code means for outputting results comprising, as the multicast paths, a minimum delay path from the source node to the rendezvous point node and minimum delay paths from the rendezvous point node to each of the destination nodes (page 614, lines 20-24, and page 615, lines 18-19).

For claim 13, Sheu et al. disclose wherein the minimum delay path on which the candidate nodes exist is one having maximum delay among minimum delay paths from the source node to each of the destination nodes (page 614, second column, Table 1, line 27 to page 615, line 5).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

Art Unit: 2616

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 3-4 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheu et al., (IEEEICC, page 611-618, "A Fast And Efficient Heuristic Algorithm For The Delay-And Delay Variation Bound Multicast Tree Problem", 2001).

For claim 3, Sheu et al. disclose a fast and efficient heuristic algorithm for the delay-and delay variation bound multicast tree problem, comprising:

obtaining minimum delay paths from the source node to each of the destination nodes by using topology information and delay information of the network (page 613, section 3.1. The Basic concept of DDVCA, lines 23-32);

selecting candidate nodes of a rendezvous point node, nodes on one of the obtained minimum delay paths (page 613, lines 15-16, and lines 26-34);

for each of the candidate nodes, calculating minimum delay paths from the candidate node to each of the destination nodes, and obtaining a difference between the maximum value and the minimum value among delays of the calculated minimum delay paths (page 614, section 3.2. A formal description of DDVCA, second column, lines 2-5, and figure 3, line 18 to page 615, line 5);

selecting, as the rendezvous point node, the candidate node for which the difference is smallest among differences for all of the candidate nodes (Table 1, page 615, lines 15-17); and

outputting results comprising, as the multicast paths, a minimum delay path from the source node to the rendezvous point node and minimum delay paths from the

Art Unit: 2616

rendezvous point node to each destination node (page 614, lines 20-24, and page 615, lines 18-19).

However, Sheu et al. do not expressly disclose wherein the multicast communication path calculation apparatus sends the output results to the multicast communication path setting apparatus, and the multicast communication path setting apparatus establishes the multicast paths according to the output results. To include the multicast communication path calculation apparatus sends the output results to the multicast communication path setting apparatus, and the multicast communication path setting apparatus establishes the multicast paths according to the output results would have been obvious to one of ordinary skill in the art because Sheu et al. disclose on page 614, lines 15-16 “DDVCA first calculates (path calculation apparatus means) the minimum delay between each destination node and each other node in the network.” Sheu et al. further disclose on page 614, lines 24-25, “Intuitively, the multicast delay variation of thus formed (setting apparatus means) multicast tree ...”

For claim 4, Sheu et al. disclose wherein each node in the network measures traffic state of the network and sends the measurement results to the multicast communication path calculation apparatus, and the multicast communication path calculation apparatus calculates the multicast paths according to the measurement results (page 614, second column, lines 18-27).

For claim 8, Sheu et al. disclose further comprising a part configured to include the output results in a multicast path setting control message, and send the multicast

Art Unit: 2616

path setting control message over the multicast paths indicated by the output results (page 614, lines 24-25).

For claim 9, Sheu et al. disclose further comprising:

a part configured to receive a request to calculate the multicast paths from a multicast communication path setting apparatus (section 3.2. A formal description of DDVCA, page 614, line 2 to second column, line 1); and

a part configured to send the output results to the multicast communication path setting apparatus (page 614, lines 24-25).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TOAN D. NGUYEN whose telephone number is (571)272-3153. The examiner can normally be reached on M-F (7:00AM-4:30PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Firmin Backer can be reached on 571-272-6703. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2616

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/T. D. N./  
Examiner, Art Unit 2616

/FIRMIN BACKER/  
Supervisory Patent Examiner, Art Unit 2616